

No. 681,930.

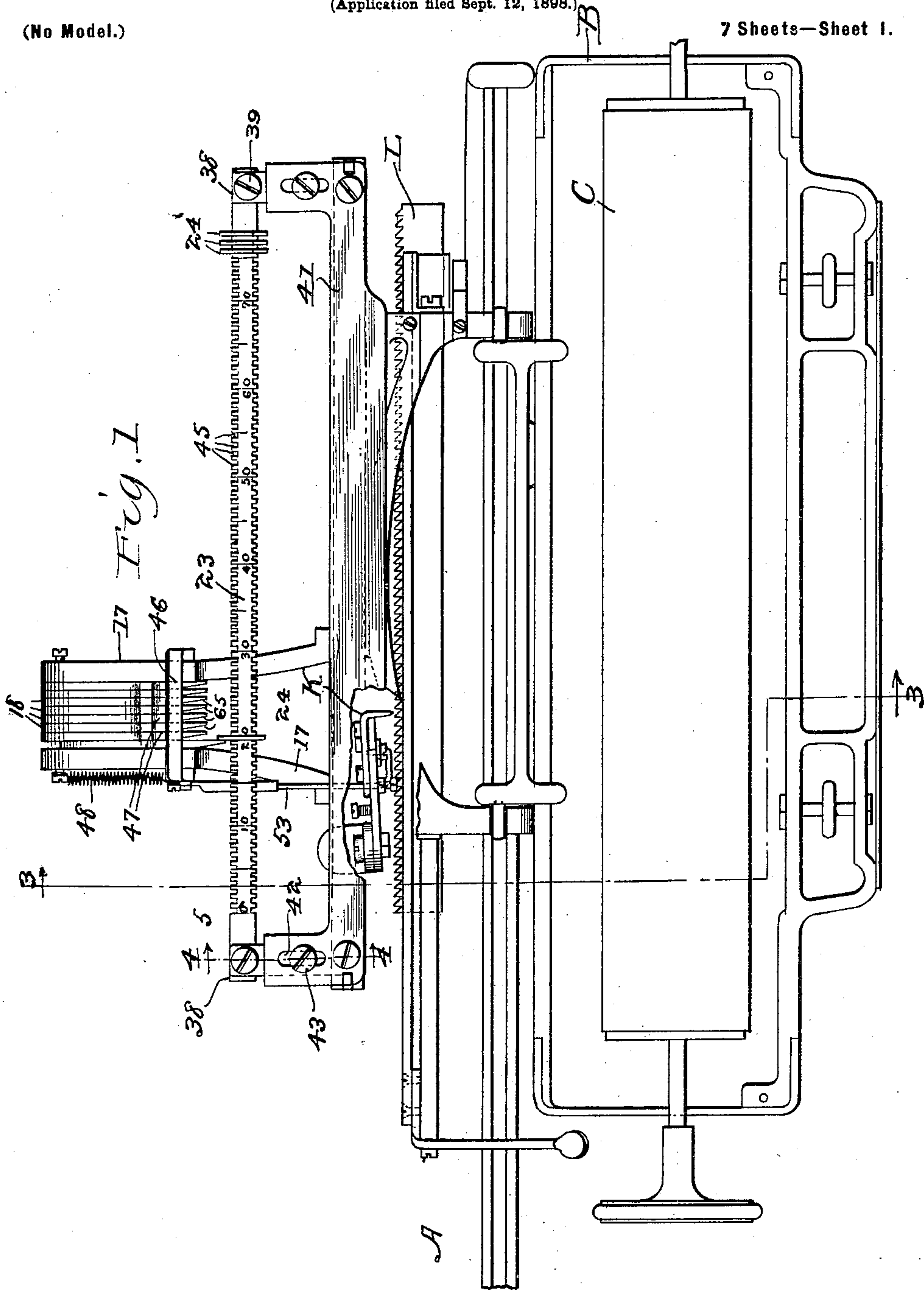
Patented Sept. 3, 1901.

L. SCHLESINGER.
TYPE WRITER.

(Application filed Sept. 12, 1898.)

(No Model.)

7 Sheets—Sheet 1.



Witnesses
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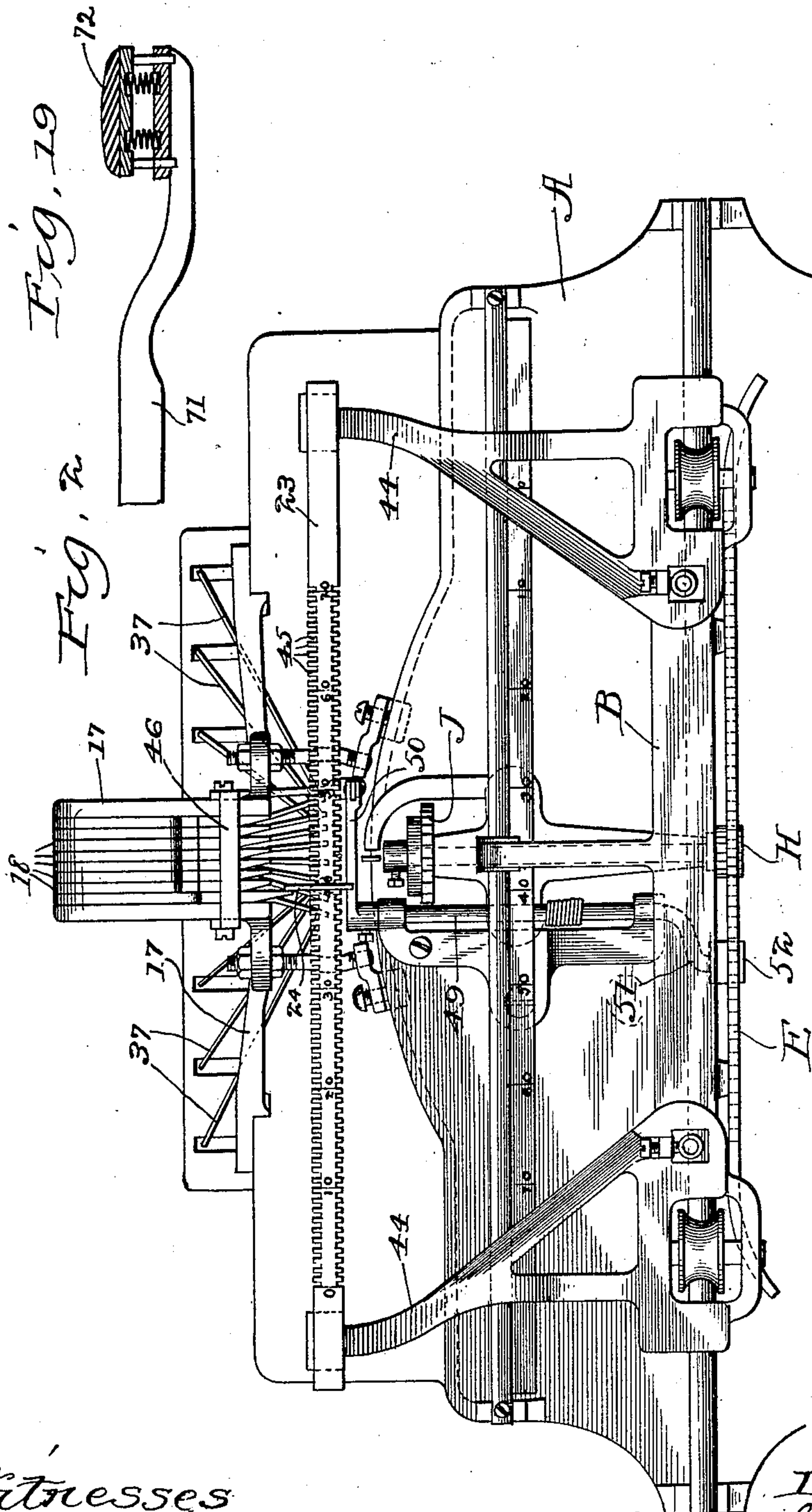
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(Application filed Sept. 12, 1898.)

(No Model.)

7 Sheets—Sheet 2.



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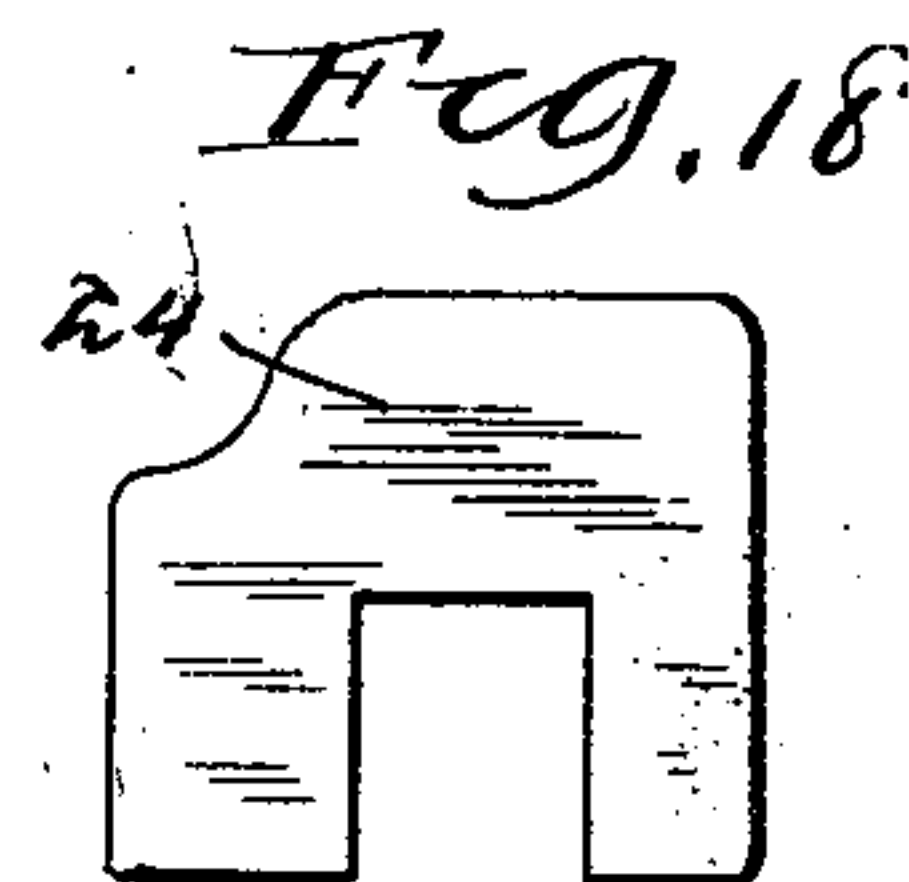
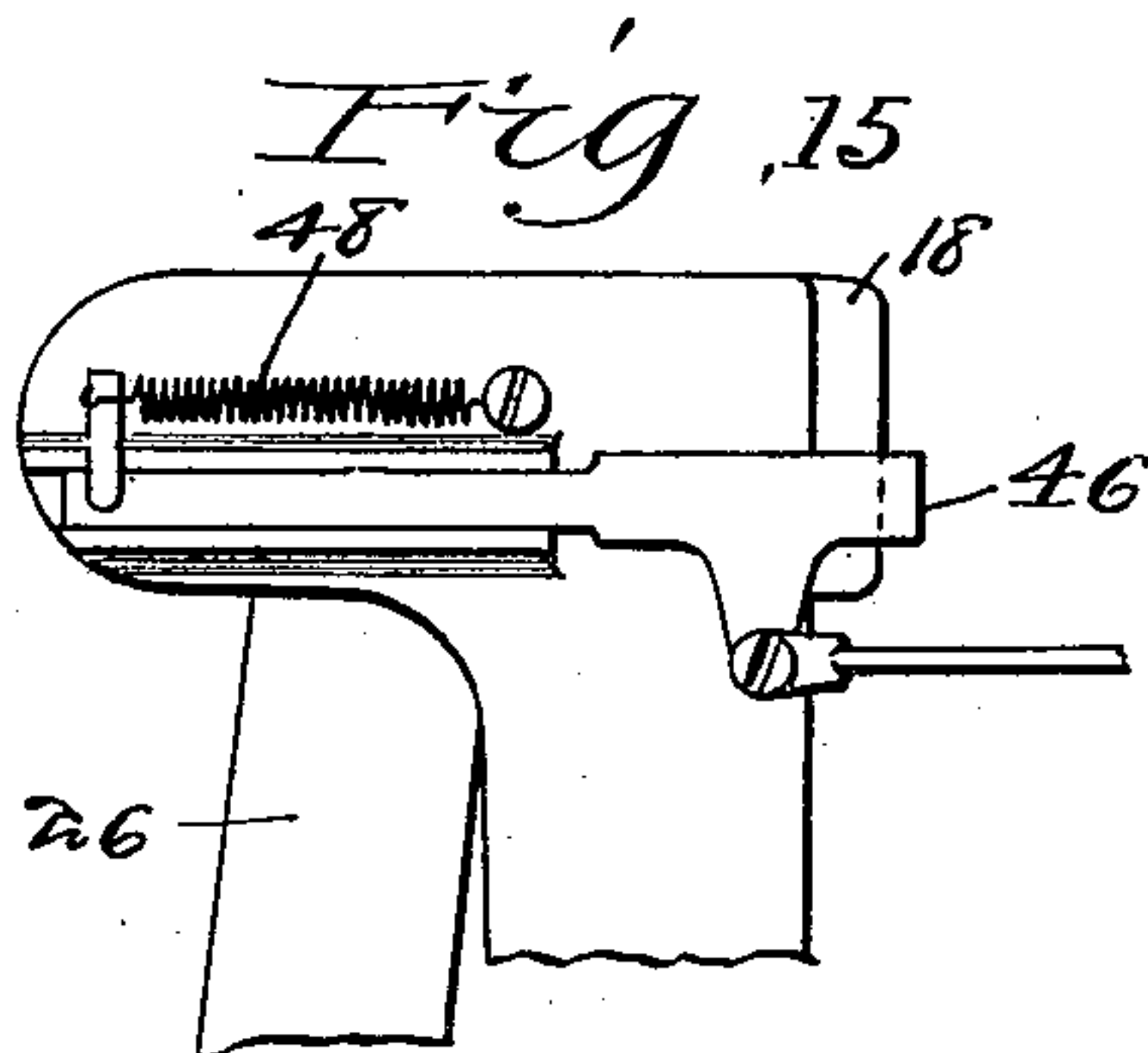
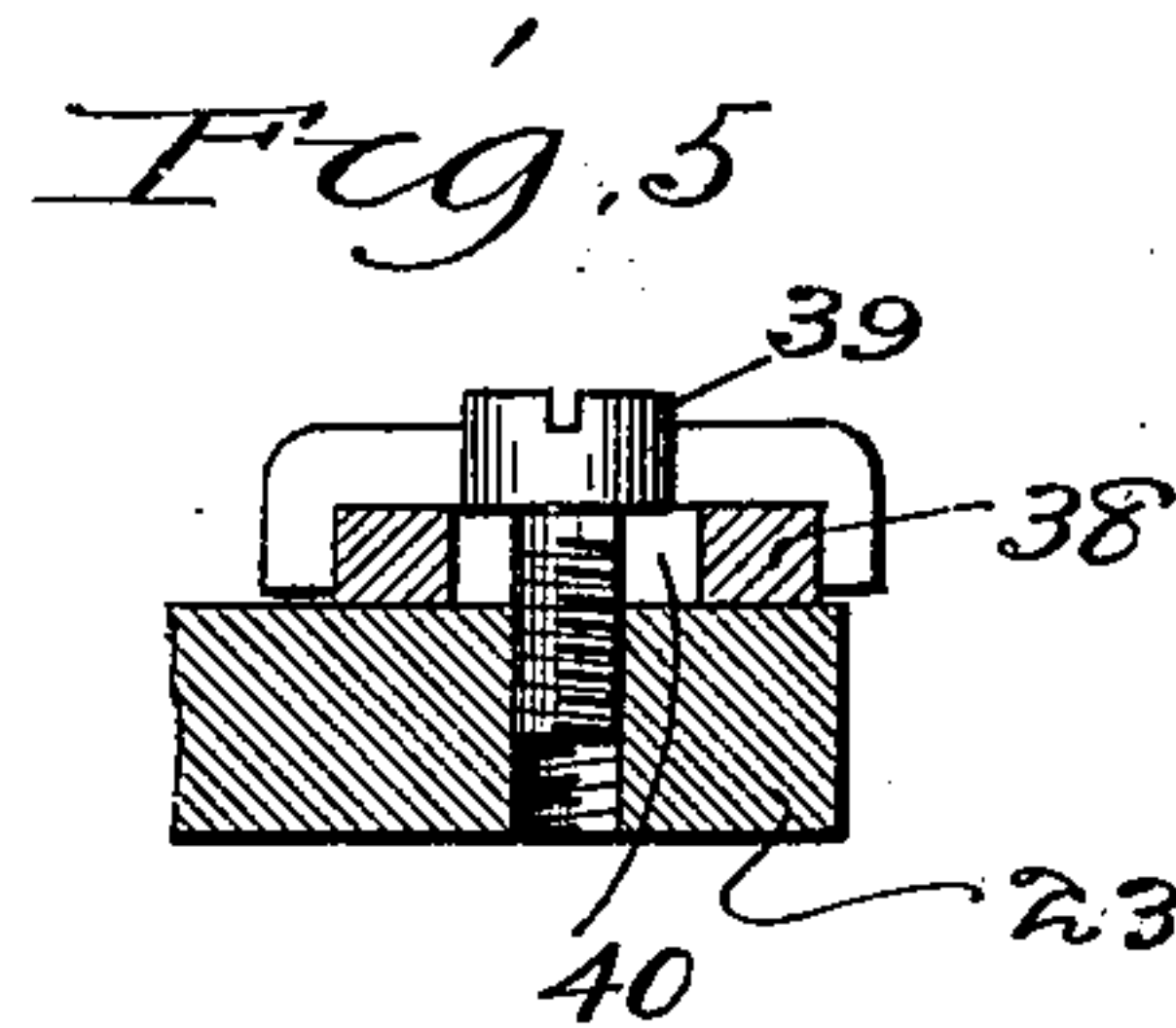
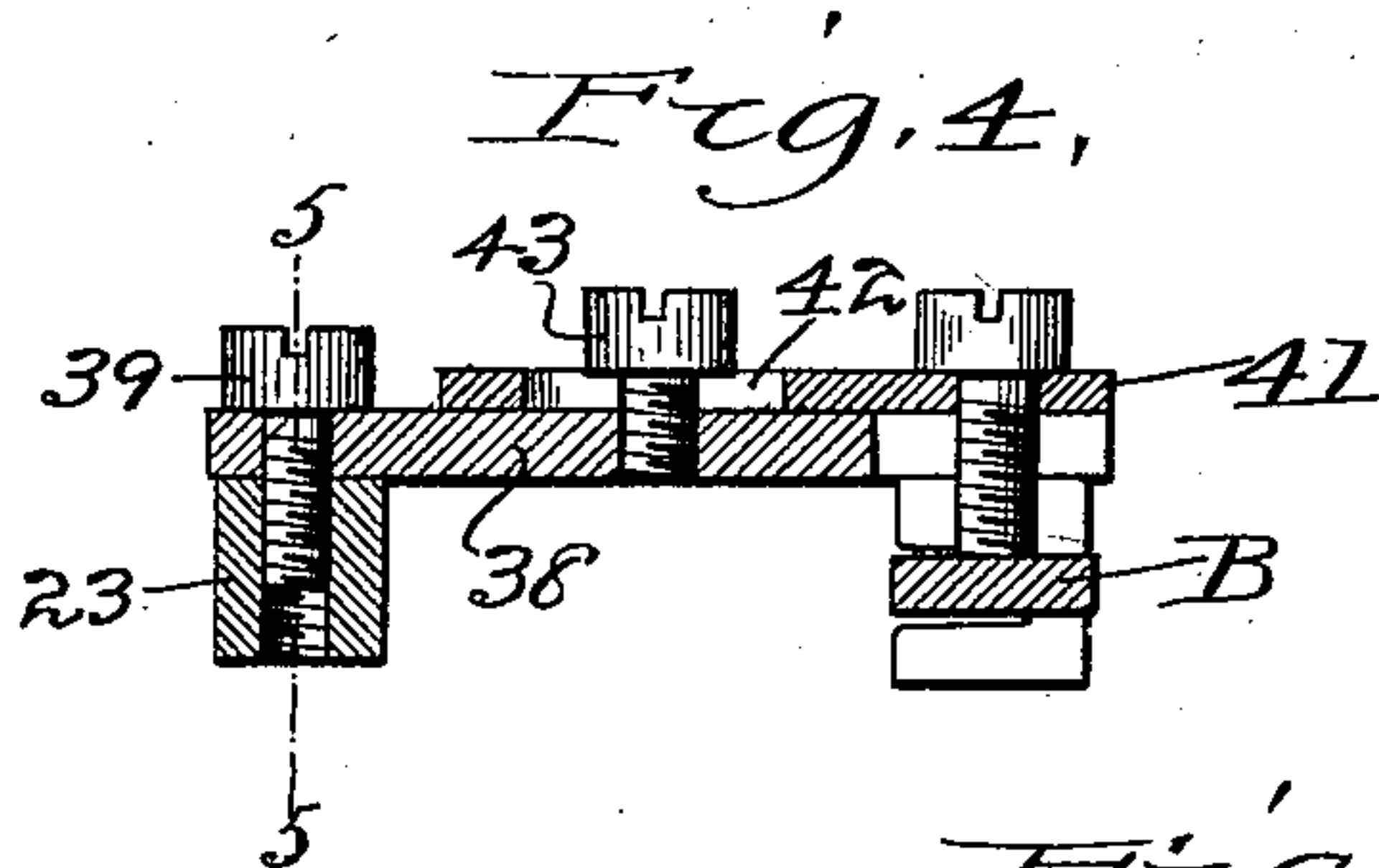
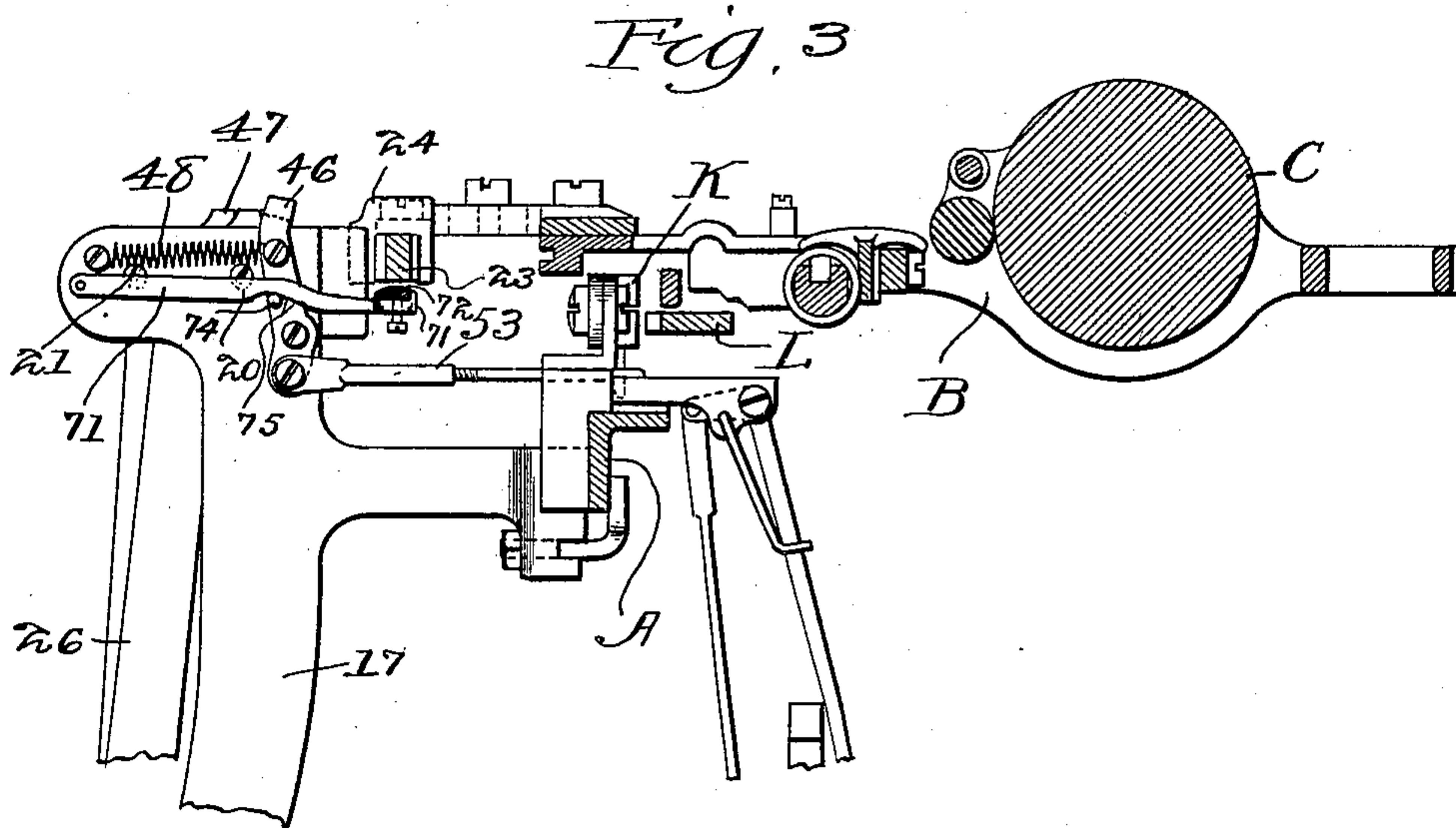
Patented Sept. 3, 1901.

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(Application filed Sept. 12, 1898.)

(No Model.)

7 Sheets—Sheet 3.



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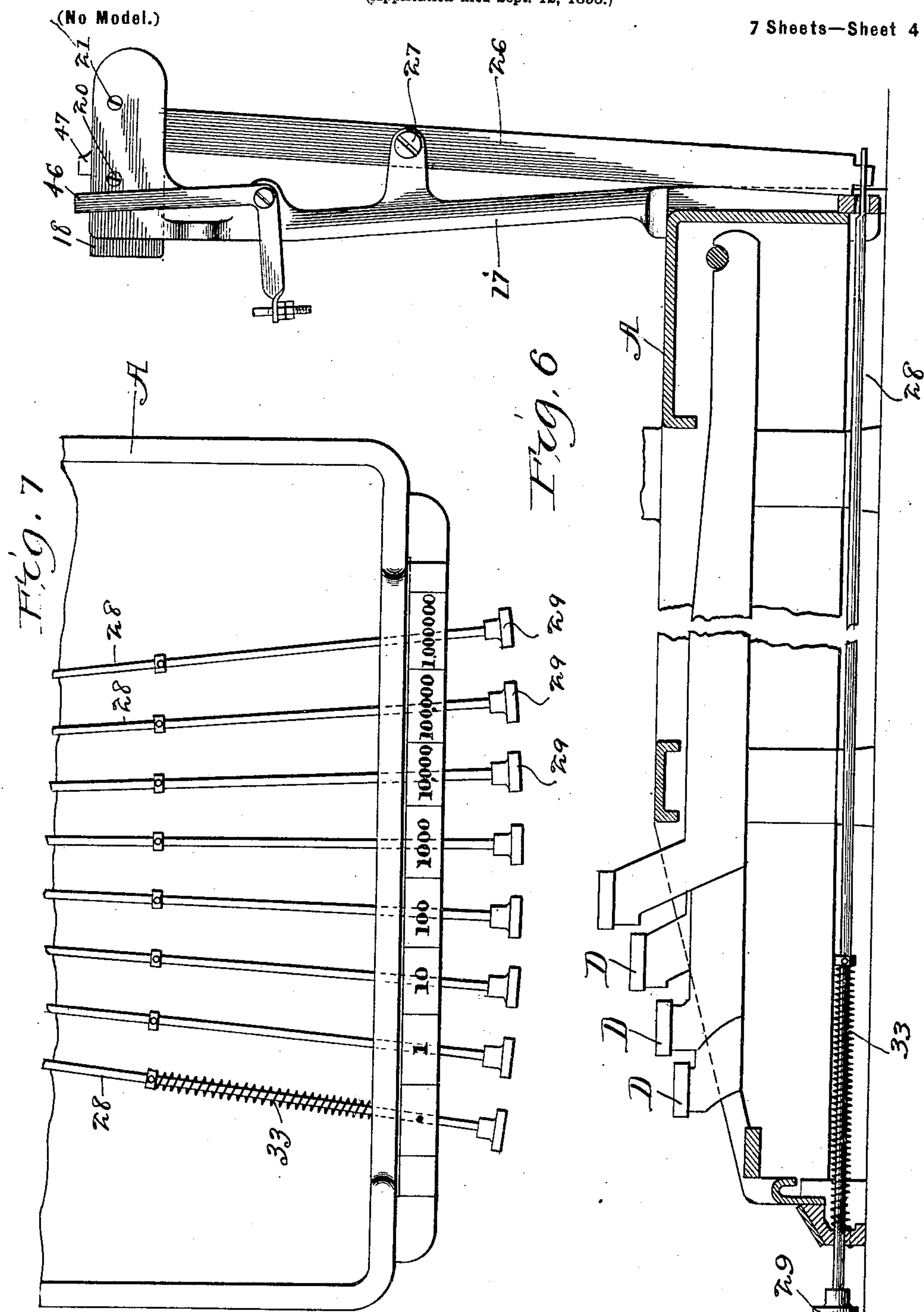
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7 Sheets—Sheet 4.



No. 681,930.

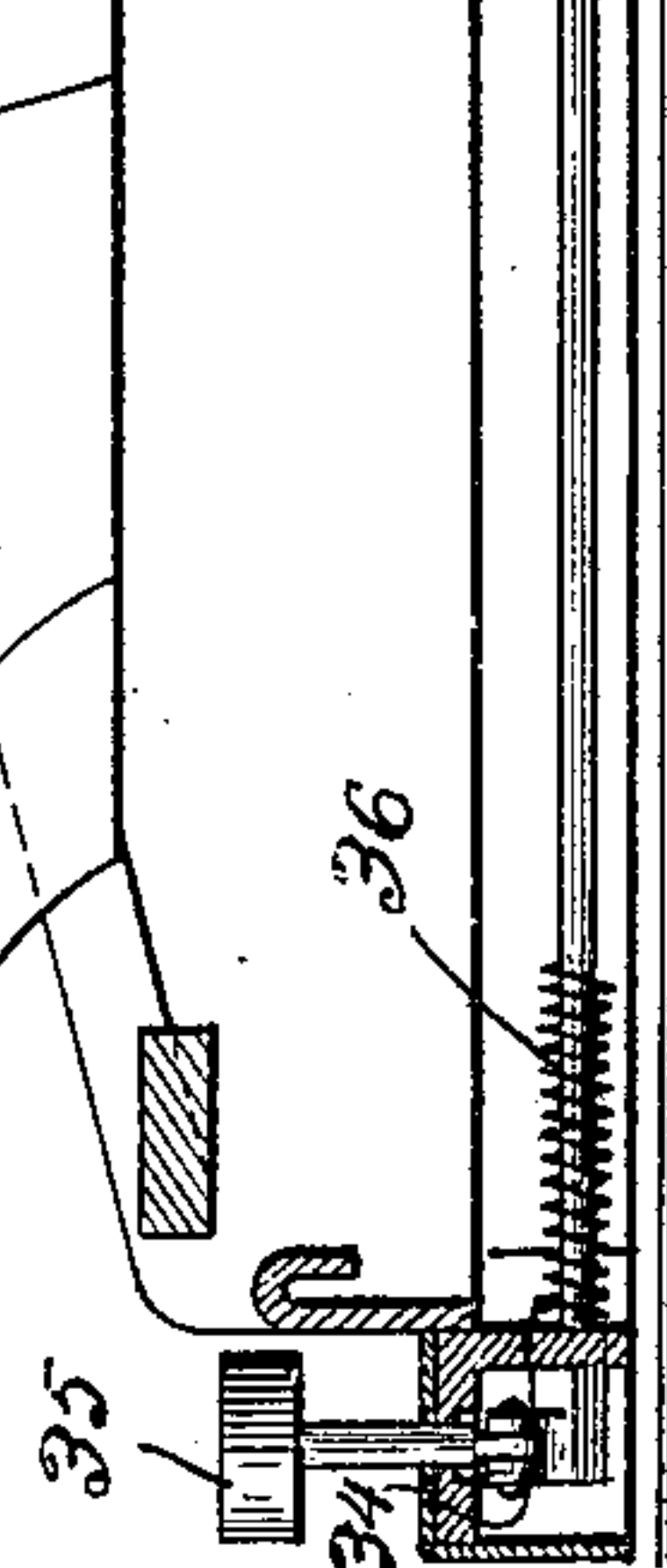
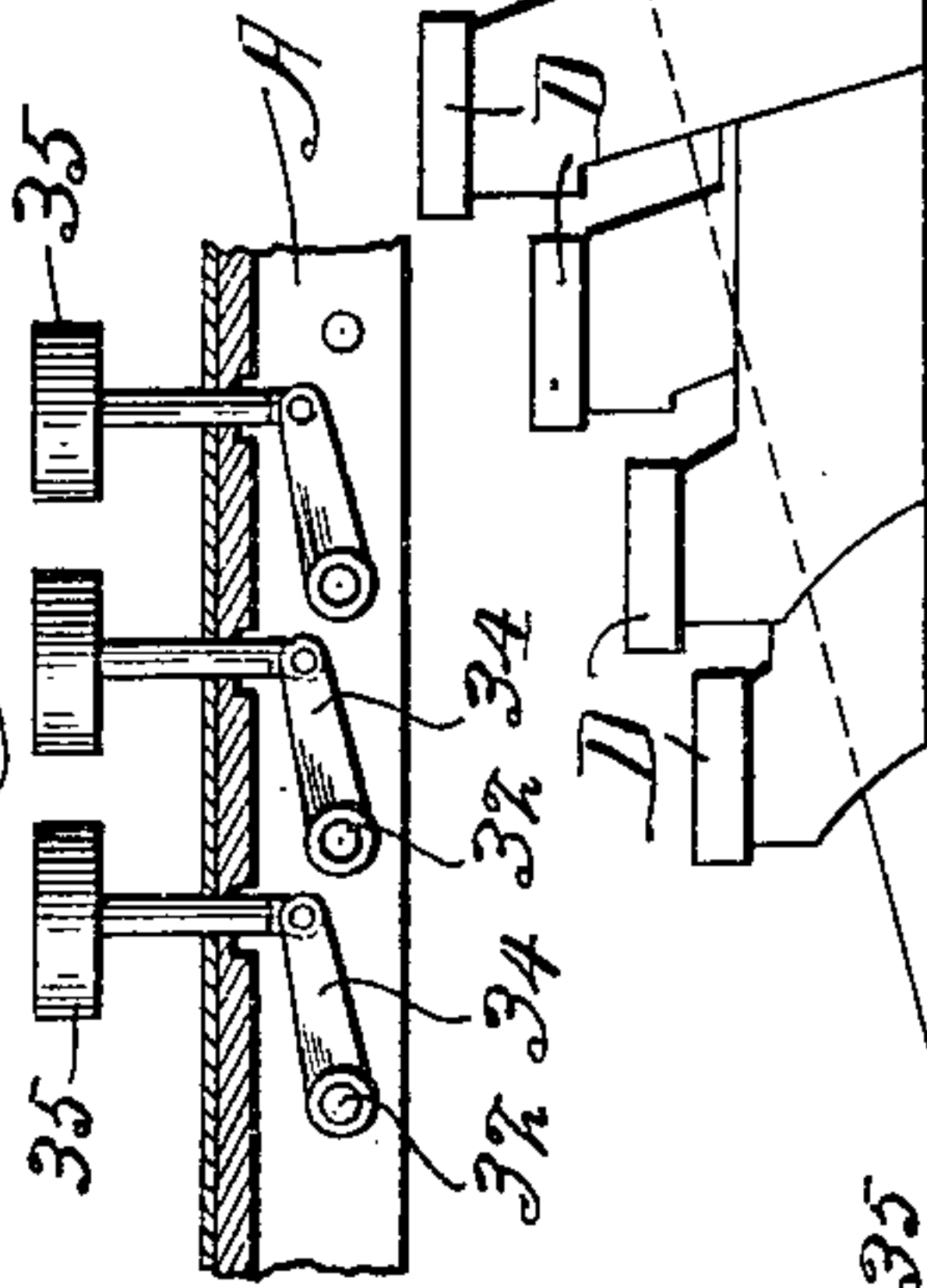
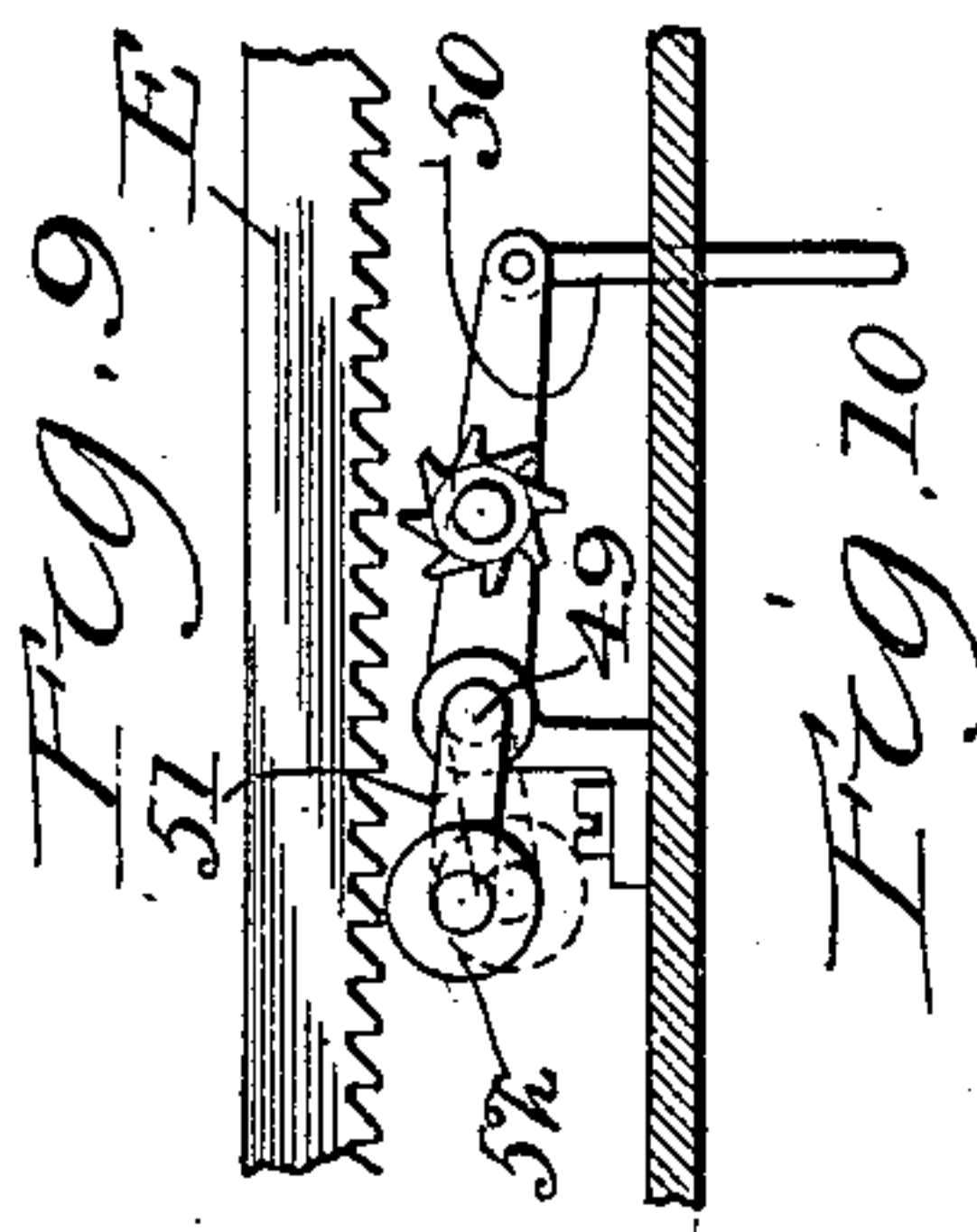
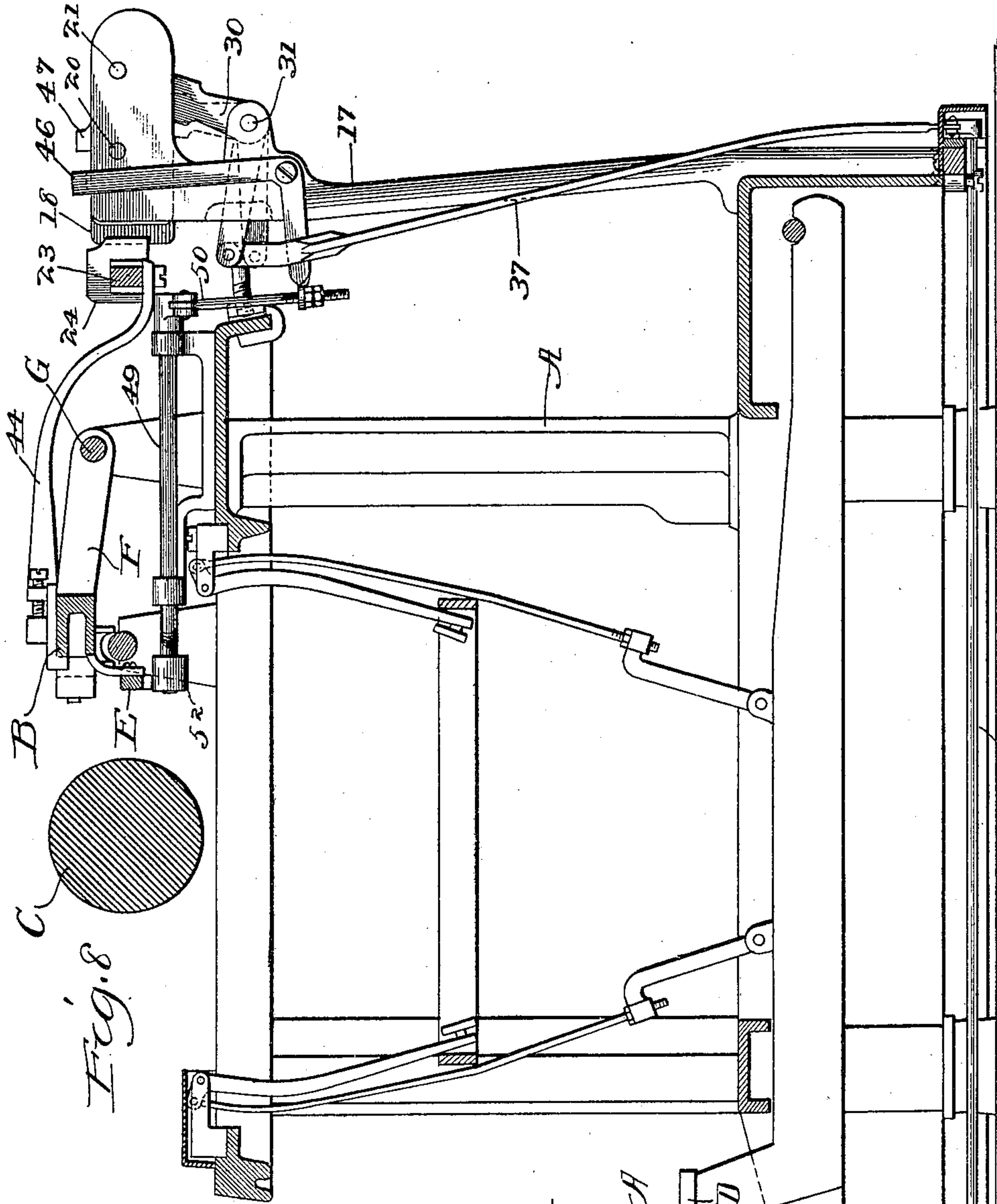
Patented Sept. 3, 1901.

L. SCHLESINGER.
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(Application filed Sept. 12, 1898.)

7 Sheets—Sheet 5.

(No Model.)



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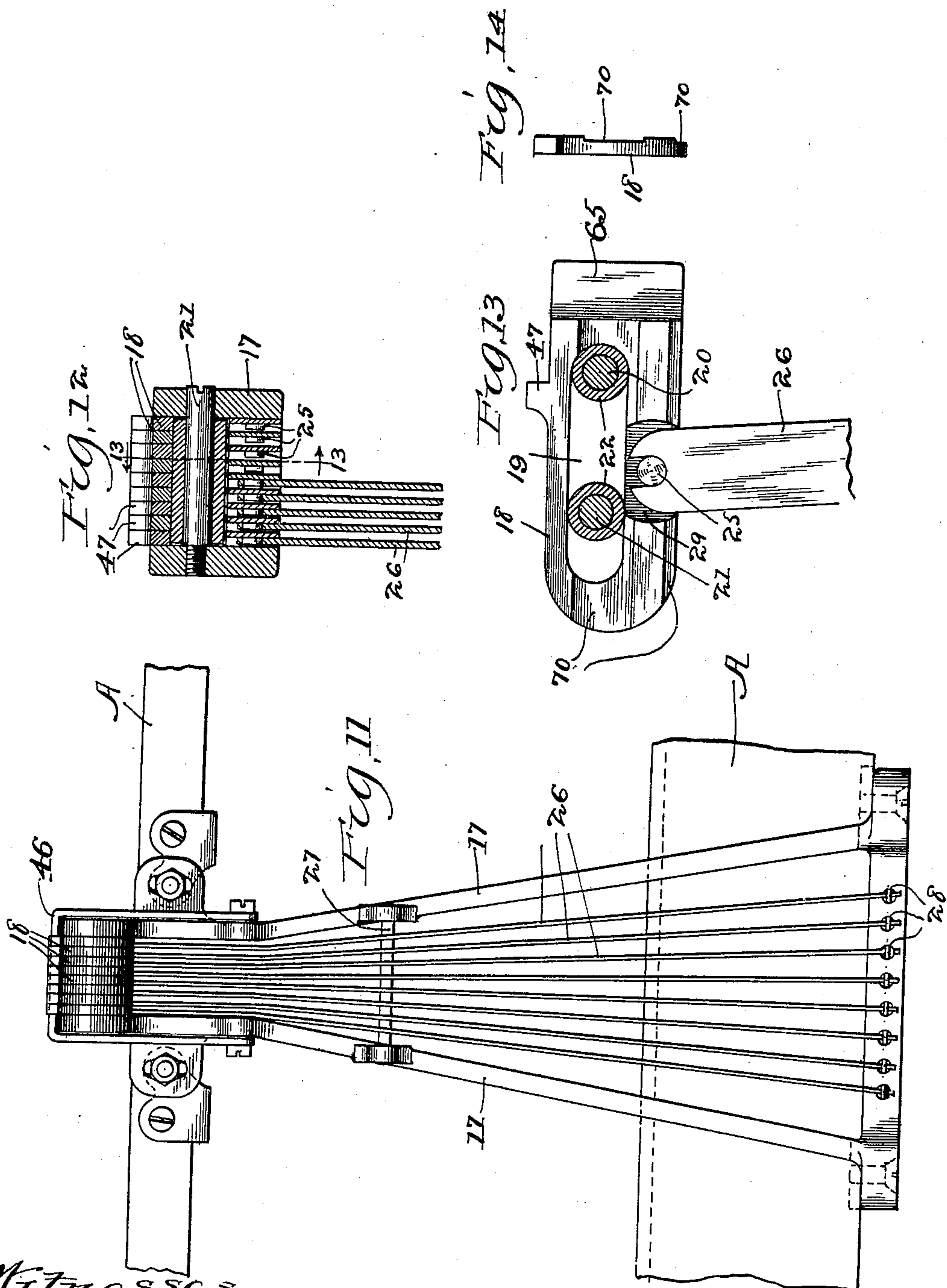
L. SCHLESINGER.
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Patented Sept. 3, 1901.

(Application filed Sept. 12, 1898.)

(No Model.)

7 Sheets—Sheet 6.



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No. 681,930.

Patented Sept. 3, 1901.

L. SCHLESINGER.
TYPE WRITER.

(Application filed Sept. 12, 1898.)

(No Model.)

7 Sheets—Sheet 7.

Fig. 16

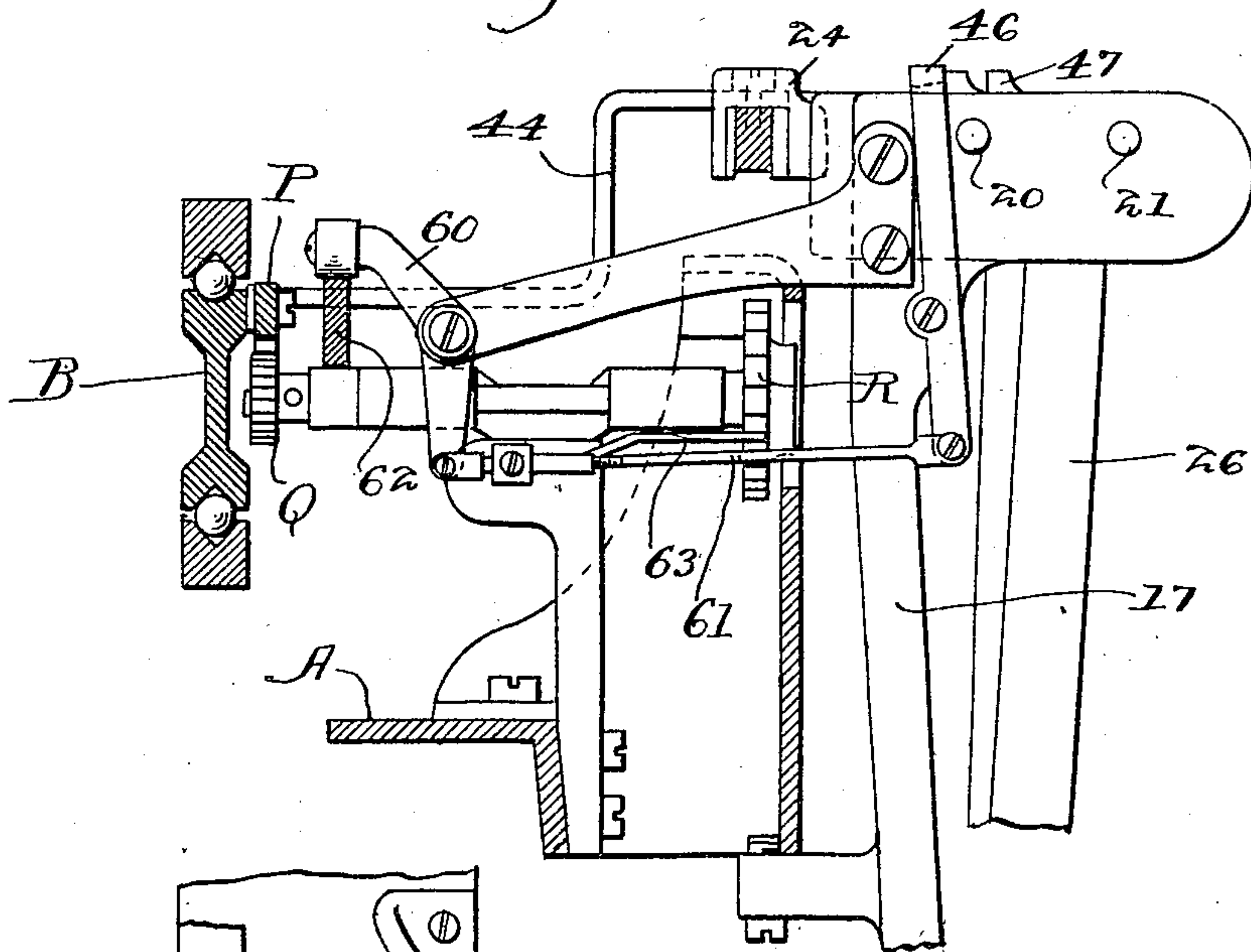
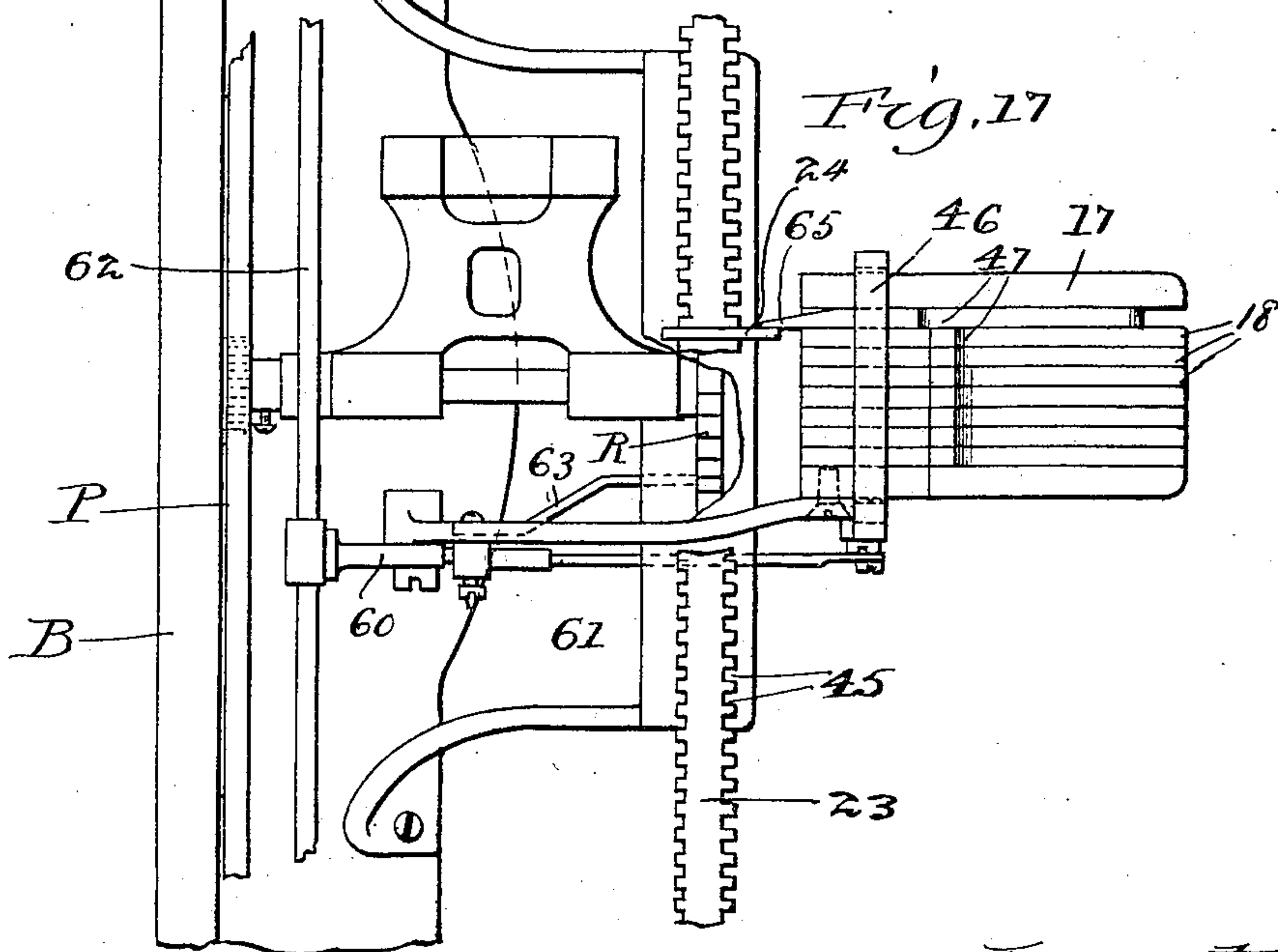


Fig. 17



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UNITED STATES PATENT OFFICE.

LOUIS SCHLESINGER, OF CHICAGO, ILLINOIS.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 681,930, dated September 3, 1901.

Application filed September 12, 1898. Serial No. 690,771. (No model.)

To all whom it may concern:

Be it known that I, LOUIS SCHLESINGER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Tabulating Attachment for Type - Writers, of which the following is a specification.

This invention relates to tabulating attachments for type-writers.

10 The object of the invention is to provide a spacing attachment for type-writing machines of simple and improved construction wherein the work of tabulating may be easily and expeditiously effected.

15 The invention consists substantially in the construction, combination, location, and arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally specifically pointed out in the appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon, Figure 1 is a plan view of a type-writing machine, showing a construction and arrangement embodying the principles of my invention applied thereto, parts being broken out to illustrate the operation of the construction. Fig. 2 is a plan view of a different type of type-writer, showing the application thereto of a tabulator constructed in accordance with the principles of my invention. Fig. 3 is a vertical transverse section through the upper part of the type-writer of the type shown in Fig. 1 on the line 3 3 looking in the direction of the arrows. Fig. 4 is a detail sectional view on the line 4 4, Fig. 1, looking in the direction of the arrows. Fig. 5 is a broken detail sectional view on the line 5 5, Fig. 4. Fig. 6 is a broken sectional detail view of a portion of a type-writer frame, showing an arrangement of keys and levers employed in connection with the spacing attachment and the relation thereof to the ordinary type-keys of the machine. Fig. 7 is a detail broken view in plan, showing an arrangement of auxiliary keys employed in connection with the invention. Fig. 8 is a vertical transverse section of a machine of the type shown in Fig. 2, showing the application of the invention thereto. Fig. 9 is a detached detail broken view, a part in section, illustrating an arrangement for

releasing the paper-feed carriage from its feed mechanism and embodying the principles of the invention. Fig. 10 is a broken detail view, parts in section, illustrating a different arrangement of auxiliary keys for operating the spacing attachment and embraced within the principles of my invention. Fig. 11 is a broken detail view in rear elevation of the spacing attachment as applied to a type-writing machine. Fig. 12 is a broken detail view in section of the spacing-plungers, the plane of section being at right angles to the plane of movement of the plungers. Fig. 13 is a broken detail view in section on the line 13 13, Fig. 12, looking in the direction of the arrows. Fig. 14 is a detached detail view in rear end elevation of a spacing-plunger. Fig. 15 is a broken detail view illustrating a modified arrangement embodying the principles of my invention. Fig. 16 is a broken view in vertical section, parts omitted, of another style of type-writing machine, showing the invention applied thereto. Fig. 17 is a broken plan view of the construction shown in Fig. 16. Fig. 18 is a detached detail view of a detachable stop-plate. Fig. 19 is a detached detail view showing a modified arrangement of brake-shoe.

In the drawings and specification is shown, described, and claimed a spacing attachment particularly adapted to securing speed and accuracy in tabulating columns of words or figures, where, for instance, it is important that all units in a column of figures shall fall under each other in a vertical line, and similarly with tens, hundreds, thousands, tenths, hundredths, thousandths, or other denominations, the attachment being so arranged as to be capable of adaptation to recording numbers of any desired or varying denomination. The present invention relates to an apparatus or arrangement for securing these results efficiently and expeditiously.

Referring to the accompanying drawings, the same part is designated by the same reference-sign wherever it occurs throughout the several views.

A designates the frame of a type-writing machine; B, the paper-feed carriage; C, the platen or paper-feed roll. These several parts may be of the usual or any suitable, convenient, or well-known type of construction and

arrangement and form no part of the present invention except in their cooperative relation to the spacing attachment.

Suitably bolted or otherwise secured to the framework of the type-writing machine, at the rear end thereof, is a framework 17, in which are mounted a series of movable plungers 18.

In Figs. 13 and 14 is illustrated a form of sliding plunger embodying the principles of my invention, wherein each plunger is shown in the form of a plate having an elongated slot or opening 19 therein, the slots or openings of the several plates or plungers registering with each other when said plungers are assembled. It is to be understood, however, that my invention is not limited or restricted to sliding plungers nor to the specific construction and arrangement thereof as shown in these views of the drawings. In the particular form shown pins, bars, or other suitable projections 20 21, mounted in or formed on the side bars of the frame 17, are arranged to pass through the registering slots or openings 19 of the assembled plates. The elongated slots or openings 19 are somewhat longer, according to the degree of projection which is to be imparted to the plungers, than the distance between the pins or projections 20 21, the said pins or projections thus forming supports for the plungers and guiding the same during the movements thereof and also forming stops therefor when said plungers reach the limits of their movements, thus securing uniformity in degree of movement of all the plungers. If desired and in order to secure easy working of the parts, the pins or projections 20 21 may be provided with sleeves 22, which are of just sufficient external diameter to pass snugly through the longitudinal slots or openings 19 of the plungers without causing said plungers to bind thereon. Thus the sleeves constitute the contacting surface with the walls of the slots or openings, and hence permit the plungers to move freely and accurately thereon when suitably projected. These sleeves also serve to suitably space the side bars of frame 17, thus preventing said side bars from being drawn so close together as to cause the plungers 18 to bind against each other. It is obvious, however, that this specific construction and arrangement of the parts may be altered and changed or the sleeves omitted or the shape thereof varied and still not depart from the spirit and scope of my invention, the essential feature being the provision of movable plungers whatever the specific construction and arrangement thereof.

Suitably mounted upon to travel with the paper-feed carriage B, as will be more particularly hereinafter explained, is a rack-bar 23, adapted to carry suitable stops 24, presently to be more fully described. The ends of the plungers 18 when said plungers are in their normal or retracted position are held out of the path of traverse of the stops 24 when the paper-feed carriage proceeds upon

its movements during the ordinary operation of type-writing. The arrangement is such, however, that when a plunger 18 is moved from its normal position, as shown, for instance, in Figs. 1, 2, 3, and 8, it intersects the path of traverse of stops 24, and hence when the paper-feed carriage reaches the point where a stop 24 engages the projected end of the plunger the movement of said carriage will be arrested.

Many specifically different arrangements may be employed for moving the plungers. For instance, and in the construction shown in the drawings as illustrative of the principles involved, (see particularly Figs. 3, 6, 11, 12, 13, 15, and 16,) a series of levers 26, corresponding in number to the number of plates or plungers employed, are provided. Each lever 26 is arranged to loosely engage one of said plates or plungers 18, so that when said lever is actuated its corresponding plunger is moved. In Figs. 12 and 13 is shown a simple and convenient loose connection between the levers 26 and plungers 18 as illustrative of the principles involved; but the invention is not limited to this specific construction. As shown in said views of the drawings, the end of each lever is provided with a notch arranged to straddle or engage over a lug or projection 25, suitably formed on or secured to the plungers 18, and in order that the levers 26 or projections 25 may offer no obstruction to the movements of the plungers said plungers may have suitable seats or depressions 29 formed therein to receive the ends of the levers. In the generic conception of the invention, however, the particular form of connection between the levers and plungers is unimportant, the essential feature being that the connection is such that when any particular lever is actuated it moves its corresponding and cooperating plunger into position to form a stop for the paper-feed carriage.

In the form of the invention illustrated in Figs. 3, 6, and 11 the levers 26 are pivotally mounted intermediate their ends, as at 27, and to the lower ends thereof are suitably connected the operating-bars 28, by which said levers are actuated. The operating-bars may be arranged in any suitable or convenient manner. In the form shown in Figs. 6 and 7 said bars are arranged to extend to the forward side of the machine into convenient position to be manipulated by the operator, and suitable auxiliary keys 29 are provided by which said bars 28 and through them the levers 26 are actuated.

Instead of the arrangement of levers 26 above described and as illustrative of the generic character of the invention, said levers may be in the form of bell-crank levers 30, pivotally mounted at the angles thereof, as at 31, (see Fig. 8,) and rods 37 are provided and suitably connected at the respective ends thereof to the free arms of bell-crank levers 30 and the operating-bars 32.

These bars may be similar in their construction and arrangement to the bars 28 above described and may in a similar manner extend to a suitable and convenient place to be readily and easily manipulated by the operator. In the form shown in Figs. 6 and 7 the bars 28 are arranged to be projected endwise when the auxiliary keys 29 are manipulated, and springs 33 may be provided and suitably arranged to oppose the endwise projection of said bars, whereby said bars, and consequently the levers 26 and plungers 18, are normally held in retracted position. In the form shown in Figs. 8 and 10 the bars 32 are arranged to be rocked, and to this end said bars are provided with the crank-arms 34, to which the auxiliary keys 35 are connected, while the rotary or rocking movement of said bars 32 may be opposed by suitably-arranged springs 36, operating in a similar manner to springs 33 to hold bars 32 and rods 37, and hence also the plungers, in normal retracted position. By the construction illustrated in Figs. 8 and 10 I am enabled to place the auxiliary keys 35 vertically similarly to the usual arrangement of the ordinary keys D in a type-writer, whereas in the construction shown in Figs. 6 and 7 the auxiliary keys are arranged to operate in a plane at right angles to the plane in which the ordinary keys D operate. The particular arrangement of the means for operating the plungers 18, however, is unimportant so far as the generic conception of my invention is concerned, the essential feature being that said means are so placed as to be readily and easily manipulated by the operator.

As above stated, the stop-rack 23 is suitably connected to move with the paper-feed carriage B. This connection may be arranged in many specifically different ways, the essential feature being that said rack bears a definite relation to the ordinary spacing-scale of the machine and to the teeth of the carriage-feed rack-bar and that it is capable of a desirable range of adjustment. In the form shown in Figs. 1, 4, and 5 the rack-bar 23 is supported at each end by the plates 38 and screws 39, said screws passing through elongated slots 40 in said plates, (see Fig. 5,) whereby by loosening said screws a desirable range of longitudinal adjustment of said rack may be secured. The plates 38 are supported by means of a bracket or bar 41, suitably mounted on or connected to move with the paper-feed carriage. The arms of bracket 41 are slotted, as at 42, Fig. 4, whereby by loosening screws 43 the rack 23 may be adjusted laterally, as will be readily understood. This lateral adjustment of the rack is desirable, particularly in that style of type-writer where the plunger-casing is rigidly connected to the machine-frame. Where it is possible, the same ends may be attained by adjusting the plunger-casing toward and from the rack, as shown in Fig. 2.

Instead of the construction above described

for securing the rack 23 to the paper-feed carriage and as illustrative of the generic character of the invention, I may support said rack by means of brackets 44 at each end, according to the particular type of machine to which the tabulating attachment is to be applied, and said brackets may be suitably connected to the paper-feed carriage in a suitable manner to secure the desired range of adjustment of the rack.

The rack 23 is provided with a series of teeth or notches 45, preferably, though not necessarily, corresponding in number to the divisions of the ordinary spacing-scale and to the rack-teeth on the paper-feed-carriage rack. In practice I prefer to arrange the notches or teeth 45 a distance apart corresponding to the distance traversed by the paper-feed carriage in moving one letter-space, and for the sake of expedition and convenience said rack may be suitably marked or graduated to correspond with the graduations of the ordinary spacing-scale. In the particular form shown, to which, however, the invention is not limited or restricted, the rack 23 is provided with notches or teeth on both sides thereof, as shown, though the invention is not limited to the particular shape of the rack-bar nor to the particular size and arrangement of slots or grooves therein, and the stops 24 may comprise flat plates of a thickness adapting them to be received in said teeth or notches. Said stops are slotted or grooved in the edge thereof, as shown in Fig. 18, the width of said slot or groove corresponding to the thickness of the solid portion of said rack 23. By this construction it will be seen that the stops may be readily and easily straddled over the rack, and the side walls of the slot or groove in said stops will be received in the teeth or slots in the rack, thus efficiently, firmly, and detachably holding the stops in position to arrest the paper-feed carriage at the desired point when the tabulator attachment is suitably actuated.

In the operation of a tabulator attachment embodying the principles of my invention it is important to release the paper-feed carriage from its feed mechanism when a plunger 18 is moved into position to form a stop, so that the main feed-carriage-operating spring will quickly and expeditiously move the carriage until the movement thereof is arrested by the plunger. This release of the paper-feed carriage from its feed mechanism may be effected in many different ways and either independently of or, and preferably, automatically with, the actuation of the plungers, the important feature being that the paper-feed carriage is released from its feed mechanism. The particular means employed for accomplishing this result may vary with the different styles and types of machines to which the tabulator attachment is applied and with the different styles and types of paper-carriage-feed mechanism. In the drawings I have shown a construction as illustra-

tive of the principles involved wherein the release of the paper-feed carriage from its feed mechanism is effected automatically by the actuation of a plunger. The invention, however, is not limited or restricted in this respect. In the form shown a bar or arm 46 is arranged in position to be engaged and moved coincidently with the movement of any one of the plungers. As shown in Figs. 3, 6, 8, 16, and 17, this movable bar or arm may be in the form of a strap or bail suitably arranged in position to be engaged and moved when any one of the plungers is moved. A convenient arrangement is shown wherein each plunger is provided with a lug or shoulder 47, and the arm or movable part 46 is arranged in position to be engaged by said lugs. In the bail or strap form of construction the arms or legs of the bail or strap may be suitably pivoted, whereby when any one of the plungers is moved the lug or shoulder 47 thereon engages the arm or bar 46 and rocks the same. By arranging the arm or bar 46 transversely across the several plungers and in front of the shoulders or projections 47 it will be seen that when any one of the plungers is moved the said arm or bar 46 is also moved. If desired and as shown in Fig. 15, the arm or bar 46 may be arranged across the front ends of the plungers, so as to be moved when any one of the plungers is projected. In this arrangement, of course, the projections or shoulders 47 may be omitted. It is obvious that many other specifically-different arrangements may be employed to secure the movement of the bar or arm 46 when any one of the plungers is moved and still fall within the spirit and scope of the invention. A spring 48 may be employed and arranged to normally maintain the arm or bar 46 in retracted position and to oppose the movement of said arm or bar when moved by the projection or movement of a plunger. This spring also aids in returning the plunger to its normal or retracted position. In the particular form shown, wherein the paper-carriage-feed mechanism is automatically released by the actuation of a plunger, suitable connection is made between the movable arm or bar 46 and the feed mechanism of the paper-carriage, whereby when a plunger is actuated, thereby effecting a movement of the arm or bar 46, the said feed mechanism is released. The character of this connection, it is evident, varies according to the style and type of the machine and the construction and arrangement of the carriage-feed mechanism. In the form of machine shown in Figs. 2, 8, and 9 the paper-carriage is fed in the ordinary operation of type-writing by means of a feed-rack E, carried in a frame F, pivotally mounted, as at G. The rack is fed by a pinion H on a shaft carrying the escapement-ratchet J (see Fig. 2) and may be actuated in the usual and well-known manner of machines of this style by the operation of the ordinary type-bars. A rock-shaft 49 is suitably jour-

naled in bearings on the machine-frame, and at one end thereof said shaft is connected in a suitable and convenient manner to arm or bar 46 or the bail or strap connected therewith, as by means of the crank-arm and connection 50. By this construction it will be seen that when the arm or bar 46 is moved—that is, when a plunger 18 is moved—thereby rocking or moving the bail or strap, said shaft 49 is rocked in its bearings. At the other end of said shaft means are provided and arranged to engage the feed-rack E of the paper-carriage and raise the same out of engagement with the feed-pinion H. In the particular form shown, to which, however, the invention is not limited or restricted, a crank-arm 51 on the front end of said shaft 49 carries a block or roller 52, which when said shaft is rocked engages and raises the rack E out of mesh with pinion H, thus releasing the paper-carriage from its feed mechanism and permitting the main operating-spring to cause the carriage to move quickly across the frame of the machine until the movement thereof is arrested by a stop 24 coming into contact with the projected plunger. In this arrangement the weight of rack-frame F aids spring 48 in returning the parts to their normal or initial position.

In Figs. 1 and 3 is shown the application of a tabulator attachment to a machine wherein the escapement-pawl K of the carriage-feed mechanism is pivotally mounted and is connected by means of a rod 53 to the movable arm or bar 46, whereby when said arm or bar is moved, as above explained, the rack-pawl K is swung out of engagement with carriage-feed rack L, thus disengaging the carriage from its feeding mechanism.

In Figs. 16 and 17 is shown the tabulator attachment applied to another style of machine wherein the carriage-feed rack P is disengaged from its operating-pinion Q by means of a bell-crank lever 60, having one of its arms suitably connected, as by means of a rod 61, with the movable bar or arm 46, whereby when any one of the plungers is moved said bell-crank lever 60 is rocked. The other arm of bell-crank lever 60 is arranged over a bar 62, which is connected to the paper-feed carriage in position when depressed to cause the pinion Q to be disengaged from the rack P.

In some styles of machines it sometimes happens that when the tabulator attachment is operated the momentum of the paper-carriage when released from its feed mechanism causes said carriage to move beyond the point where it is to be arrested. This fault is liable to occur in that style of machine where no special arrangement is employed to limit or check the ordinary escapement-ratchet when the disengagement of the carriage-feed mechanism is effected by the operation of the tabulator attachment. In order to avoid this trouble, means may be provided for locking the paper-carriage-feed mechanism against movement when the tabulator attachment is

actuated. This idea may be carried out in many specifically different ways and still fall within the spirit and scope of the invention. As illustrative of an operative arrangement embodying the principles of my invention, I have shown in Figs. 16 and 17 a construction wherein is employed an arm 63, connected to move with the rod 61, by which the carriage-feed mechanism is released. This arm 63 is arranged when moved to enter the space between adjacent teeth of escapement ratchet-wheel R, by which pinion Q is actuated. In this manner it will be seen that when a plunger of the tabulator attachment is moved into position to arrest the carriage and the carriage-feed mechanism is released and thrown out of action said feed mechanism is locked against further movement, and hence is brought to a state of rest, so that when the auxiliary key through which the plunger is moved is released and the parts return to their normal or initial positions and engagement of the carriage-feed mechanism is again established no danger is incurred of the carriage being carried farther by such feed mechanism until further manipulation takes place.

It sometimes occurs that the plungers will stick or bind together, so that when one is moved the next adjacent one will also be carried along with it, thus deranging the spacing and tabulating functions. In order to avoid this trouble, I provide grooves in the sides of the plungers arranged to extend in the direction of movement thereof, as indicated at 70, Figs. 13 and 14. By the provision of these scores or grooves the danger of adjacent plates binding or sticking together is reduced.

When the paper-carriage is released from its feed mechanism by the operation of the tabulator attachment, the main carriage-operating spring causes the carriage to move with considerable speed and force until it contacts with the projected stop or plunger. This imparts an undesirable shock or jar to the machine and its parts. In order to overcome this, I have provided a brake arranged to impede to some extent the movement of the paper-carriage when released from its feeding mechanism. In the particular arrangement of brake shown, to which, however, the invention is not limited, a brake-arm 71 is pivotally mounted upon a suitable part of the frame—as, for instance, a side bar of the frame 17—and at its free end carries an adjustable brake-shoe 72, of rubber, leather, or the like, which is arranged to be moved into contact with the surface of a movable part of the paper-carriage—as, for instance, in the particular form shown the stop-rack 23. If desired or necessary, the stop-rack may be suitably grooved in the surface thereof with which the shoe 72 contacts, and a lining of leather or other suitable material may be arranged therein. The brake lever or arm 71 may be suitably and conveniently actuated coincidently with the actuation of

any one of the plungers by providing a pin 74 in the strap or bail which carries arm or bar 46 and arranging such pin to engage a cam-surface 75 of said lever 71. From this construction, illustrative of the principles of the invention, it will be seen that whenever a plunger of the tabulating attachment is actuated a brake is automatically applied to the paper-carriage, thus relieving and reducing the shock and jar of impact of said carriage against a stop, and by adjustably mounting the brake-shoe provision is made for regulating the amount of braking effort. It will also be seen from the construction above described that the brake is not applied until the carriage is released from its feeding mechanism.

From the foregoing description it will be seen that any number of columns may be written and that they may be as close together or as far apart as may be desired. By employing a rack-bar 23 having grooves or notches therein and a stop-plate 24, which is grooved to straddle the bar and to enter the notches or grooves in the rack-bar, it will be seen that the stops are absolutely held against displacement by the shock of the carriage when released from its feed mechanism, and by providing grooves on both sides of the rack the stops are efficiently braced to receive the shock of the carriage. By providing grooves or notches in the rack corresponding in number and distance apart to the spacing-scale and to the distance the carriage moves in traveling a letter-space it will be seen that the stops may be quickly arranged at any desired point and as close together, if desired, as the distance of a letter-space. It will also be seen that the adjustment of the stops is not dependent upon the accuracy and skill of the operator; but when a stop is once placed in the desired position on the rack-bar that position corresponds absolutely to the spacing-scale position thereof, which is previously determined upon, provided the stop-rack has been suitably adjusted to the spacing-scale and the carriage-feed rack.

It will be observed that the front ends of the plungers are beveled, as at 65. The object of this arrangement is to enable the plungers to readily and easily enter the space between stops 24 even when said stops are arranged to occupy adjacent notches or grooves in the rack 23.

The operation of a tabulator embodying the principles of my invention is as follows: Suppose it is desired to write a column of figures of various denominations—for instance, with all the units falling under the “10” mark of the spacing-scale and another column with the units falling under the “20” mark of the spacing-scale, and so on with as many columns as may be desired. The operator places a stop-plate 24 in the notch or groove of the rack-bar 23 which corresponds to spacing-scale mark “10,” another in the notch or groove corresponding to spacing-scale mark

"20," and so on. Now suppose the first number of the first column is a number of units denomination, the first number of the second column is of tens denomination, and so on. The operator after placing the paper-carriage in its extreme or initial writing position first operates the "units-key" of the auxiliary series 29—that is, the one marked 1 in Fig. 7. The corresponding plunger is accordingly advanced, the paper-carriage is released from its feed mechanism, and the carriage moves freely under the influence of the main operating-spring, retarded, if desired, by the brake-shoe 72, until the first stop-plate 24 abuts against the projected plunger. This arrest of the carriage occurs in the position necessary to record the unit of the first number of the first column. When this record has been made, the operator operates the "tens-key" of the auxiliary series, thus advancing its corresponding plunger. At the same time the paper-carriage is again released from its feed mechanism and is arrested in position to record the first digit of the number. Thus the operation continues for the first numbers of all the columns to be tabulated. The operator then causes the paper to be advanced for the next line and at the same time returns the carriage to its initial position. The operations above described are then repeated for the second numbers of each column, the denomination of the number to be recorded determining the particular auxiliary key to be operated, and when the particular one of the auxiliary keys thus determined is operated the carriage is arrested at the desired point for recording the first digit of the number to be recorded, and all the numbers in each column are recorded with the units under units, tens under tens, and so on throughout any desired variation of denomination.

Having now set forth the object and nature of my invention and various forms of apparatus embodying the principles thereof and having set forth and described the construction, function, and mode of operation thereof, I desire it to be understood that my invention is not limited or restricted to the exact details of construction and arrangement shown and described, as many variations therefrom and alterations therein would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention; but

What I do claim as new and useful and of my own invention, and desire to secure by Letters Patent, is—

1. In a type-writer, a paper-feed carriage, a stop-rack carried thereby, and a feed mechanism for said carriage, in combination with a series of movable plungers, an arm or bar arranged to be moved when any one of said plungers is moved, a lever between said movable bar and the paper-carriage-feed mechanism, whereby when a plunger is moved the carriage is released, stops carried by said rack

and arranged to engage said plungers when moved, and means for actuating said plungers, as and for the purpose set forth.

2. In a type-writer, a paper-carriage, a feed mechanism therefor, stops carried by said carriage, a series of movable plungers, each arranged to be moved into position to be engaged by a stop on the carriage, an arm or bar actuated by any one of said plungers for releasing the carriage from its feed mechanism, a brake, and connections actuated by the movement of said arm or bar for applying said brake to the carriage, as and for the purpose set forth.

3. In a type-writer, a paper-carriage, a feed mechanism therefor, a series of movable plungers, each arranged when moved to arrest the carriage at a different distance from a predetermined point, a feed mechanism for said carriage, an arm or bar actuated by the movement of any one of said plungers, devices connected to said arm or bar for releasing the carriage from its feed mechanism, a brake for the carriage, and means actuated by the movement of any one of the plungers for applying said brake, as and for the purpose set forth.

4. In a type-writer, a paper-carriage, a feeding mechanism therefor, stops carried by said carriage, a series of movable plungers, a brake-arm, a brake-shoe yieldingly mounted on said arm, means actuated by the movement of any one of said plungers for releasing said carriage from its feed mechanism, and connections, also actuated by the movement of any one of said plungers, for rocking said brake-arm and applying the brake to said carriage, as and for the purpose set forth.

5. In a type-writer, a paper-carriage having the usual feed mechanism, a stop-rack and stops carried by said carriage, a series of movable plungers, an arm or strap arranged to be engaged and rocked when any one of said plungers is moved, and intermediate connections between said bar and carriage-feed mechanism and independent of said rack-bar, and actuated by the movement of said arm or strap, for releasing the carriage from its feed mechanism, as and for the purpose set forth.

6. In a type-writer, a paper-feed carriage, a stop-rack carried thereby, said rack provided with grooves or seats arranged a distance apart corresponding to the distance traversed by the carriage in moving a letter-space, stops in the form of flat plates of a thickness such as to permit the edge thereof to be removably received in said grooves or seats, a series of movable plungers arranged a letter-space distance apart, means for actuating said plungers, and means for releasing the carriage from its feed mechanism, as and for the purpose set forth.

7. A stop-rack having grooves on opposite sides thereof and arranged a letter-space distance apart, in combination with stops in the form of flat plates arranged to straddle said

rack, and having the edges thereof adapted to be received in said grooves, whereby said stops may be readily inserted in or removed from said grooves, as and for the purpose set forth.

8. A stop-rack having grooves in the exterior surface thereof, said grooves being spaced a letter-space distance apart, in combination with stops in the form of thin flat plates arranged to be removably inserted in said grooves, as and for the purpose set forth.

9. The combination in a type-writer of a paper-carriage and its feed mechanism, with a stop-rack carried by said carriage, a series of movable stop-plungers, and means for relatively adjusting said rack and plungers, as and for the purpose set forth.

10. The combination in a type-writer with a paper-carriage, a stop-rack adjustably connected at the ends thereof to said carriage and carrying stops, a series of stop-plungers, means for actuating the same, said plungers and stop-rack being relatively adjustable toward and from each other, as and for the purpose set forth.

11. In a type-writer, a paper-carriage, a feed mechanism therefor, a stop-rack and stops carried by said carriage, a series of movable plungers, each provided with a shoulder, a movable bar or arm independent of said stop-rack arranged in front of said shoulders, whereby when any one of said plungers is moved, said bar or arm is moved, means for actuating said plungers, and intermediate connections between said arm or bar and the carriage-feed mechanism actuated by the movement of said bar or arm for releasing the paper-carriage from its feed mechanism, as and for the purpose set forth.

12. In a type-writer, a paper-feed carriage, feeding mechanism therefor, a stop-rack and stops carried by said carriage, a series of movable stop-plungers, each provided with a shoulder or lug, means for actuating said plungers, and intermediate connections arranged to be engaged and actuated by the shoulders on said plungers for releasing the paper-carriage from its feed mechanism, said intermediate connections being independent of said stop-rack, as and for the purpose set forth.

13. In a type-writer, a paper-carriage, a feed mechanism therefor, and stops carried by said carriage in combination with an auxiliary frame, movable plungers mounted therein, said plungers being scored or grooved on their contacting faces, and means for actuating said plungers, as and for the purpose set forth.

14. The combination with a paper-carriage and its feed mechanism, of means for releasing said carriage from its feed mechanism, and means for arresting the same at predetermined points for uniformly columnating figures and the like, and including sliding plungers, said plungers being grooved on their contacting surfaces, as and for the purpose set forth.

15. The combination with a paper-carriage and its feed mechanism, a stop-rack and stops carried by said carriage, of a series of plungers arranged to be moved into the path of said stops, levers connected to said plungers for moving the same, auxiliary keys for rocking said levers, and intermediate connections between said plungers and the carriage-feed mechanism and coincident with the movement of said plungers for releasing the carriage from its feeding mechanism, said intermediate connections being independent of said stop-rack, as and for the purpose set forth.

16. The combination with a paper-carriage and its feed mechanism, of a tabulator attachment for releasing said carriage and arresting the same in position to uniformly columnate figures and the like, and means for locking said feed mechanism against accidental displacement, as and for the purpose set forth.

17. In a type-writer, a paper-carriage and its feed mechanism, a stop-rack and stops carried by said carriage, in combination with an auxiliary frame, pins or bolts mounted therein, a series of slotted plungers mounted to slide on said pins or bolts, means for independently moving said plungers, an arm or bar arranged to be actuated by the movement of any one of said plungers for releasing the carriage from its feed mechanism, said arm or bar being independent of said stop-rack, as and for the purpose set forth.

18. In a type-writer, a paper-carriage and its feed mechanism, and stops carried by said carriage, in combination with an auxiliary frame, a series of sliding plungers mounted therein, said plungers arranged therein a letter-space distance apart, a lever loosely connected to each of said plungers, whereby said plungers may be independently moved, auxiliary keys for actuating said levers, and means for releasing the carriage from its feeding mechanism, as and for the purpose set forth.

19. In a type-writer, a paper-carriage and its feed mechanism, and stops carried by said carriage, in combination with an auxiliary frame, a series of sliding plungers arranged therein a letter-space distance apart, each plunger provided with a seat or depression, a lever loosely connected to each plunger in said seat or depression, auxiliary keys for actuating said plungers, and means for releasing the paper-carriage from its feed mechanism, as and for the purpose set forth.

20. In a type-writer, a paper-carriage and its feed mechanism, stops carried thereby and arranged to be adjusted to any desired point with reference to each other and the spacing-scale of the type-writer, a series of movable plungers arranged a letter-space distance apart, said plungers having beveled ends, means for independently projecting said plungers into the path of traverse of said stops, and means for releasing said carriage from

its feed mechanism, as and for the purpose set forth.

21. In a type-writer, a paper-carriage and its feed mechanism, a stop-rack and stops 5 carried by said carriage, a series of movable plungers arranged a letter-space distance apart, a bail or strap independent of said stop-rack and arranged to be engaged and moved when any one of said plungers is projected, 10 means actuated by the movement of said bail or strap for releasing the paper-carriage from its feed mechanism, and means for independently projecting said plungers, as and for the purpose set forth.

22. In a type-writer, a paper-carriage and its feed mechanism, a stop-rack and stops 15 carried by said carriage, an auxiliary frame, pins or rods mounted therein, a series of sliding plungers arranged a letter-space distance apart and mounted to slide upon said pins or 20 rods, a strap or bail independent of said stop-rack and common to all of said plungers, whereby when any one of said plungers is moved said strap or bail is moved, means ac- 25 tuated by the movement of said strap or bail for releasing the carriage from its feed mechanism, and means for independently actuating said plungers, as and for the purpose set forth.

23. In a type-writer, a paper-carriage and its feed mechanism, a stop-rack and stops 30 carried by said carriage, an auxiliary frame,

pins or rods mounted therein, sleeves mount- 35 ed on said pins or rods, a series of plungers mounted to slide on said sleeves, said plungers arranged a letter-space distance apart and adapted to be projected into the path of said stops, means for independently project- 40 ing said plungers, and means actuated when any one of said plungers is actuated, and independent of said stop-rack for releasing the carriage from its feed mechanism, as and for the purpose set forth.

24. In a type-writer, a carriage having the usual feed mechanism, a stop-rack, and stops 45 carried by said carriage, a series of movable plungers each arranged to be moved into position to be engaged by a stop on the carriage, an arm or strap arranged to be moved when any one of said plungers is moved, interme- 50 diate connections between said arm or strap and carriage-feed mechanism and independent of said rack for releasing the carriage from its feed mechanism, and means for in- 55 dependently actuating said plungers, as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 9th day of September, 1898, in the presence of the subscribing witnesses.

LOUIS SCHLESINGER.

Witnesses:

S. E. DARBY,
E. C. SEMPLE.